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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/678,696

10/02/2003

Hiroyuki Sakuyama

6453P012

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04/08/2008

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EXAMINER

SMITH, JEFFREY S

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

04/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/678,696	Applicant(s) SAKUYAMA ET AL.	
	Examiner JEFFREY S. SMITH	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 54, 56-58, 60-62, 64 and 65 is/are rejected.
- 7) ☒ Claim(s) 55, 59, 63 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 54, 56-58, 60-62 and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese application publication number 2001-275119 by Itokawa ("Itowkawa") in view of Japanese application publication number 10-136352 by Matsushita Electric Ind. Co. Ltd. ("Matsushita"), which were cited by applicant and further in view of U.S. Patent 7,050,640 issued to Acharya et al. ("Acharya").

Itokawa discloses a first unit configured to select high-frequency sub-bands of each of one or more blocks into which each of frames of interlaced images forming a moving image is divided, the frames being hierarchically compressed and encoded into code stream data by performing discrete wavelet transform on pixel values of each of the blocks (see figure 1 and steps 512, 513 of figure 9);

a second unit configured to calculate a value of each of LH and HH components (s513); and

a third unit configured to compare the calculated value with a threshold and to estimate that motion is high-speed if the calculated value is greater than the threshold and that the motion is low-speed if the calculated value is less than or equal to the threshold (s515).

The values that are calculated for estimating an amount of motion by Itokawa are entropy values instead of values for an amount of codes. As described by the Japanese examiner, calculating values for an amount of codes instead of calculating an entropy value would lead to the predictable result of estimating an amount of motion because the entropy value is a function of the amount of codes of the LH sub-band:

Whether the computed value of entropy of LH component is larger or not relative to the threshold value is judged in order to switch between the frame unit processing and field unit processing depending upon the presence or absence of the movement between the field, more specifically, the movement amount between the field is estimated by the computed value of the entropy of LH component.

Generally, it is obvious for a person who is familiar with the art that the entropy and code amount are proportionate to each other at the lossless compression time. Therefore, a person with an ordinary skill in the art can easily conceive computing the code amount at the time of lossless compression of LH component instead of computing the entropy component disclosed in [Itokawa].

(Japanese Notice of Rejection transmitted May 11, 2007).

Itokawa does not disclose calculating the ratio of the codes in the LH component to the codes of the HL component, and comparing the ratio to a threshold.

However, comparing the ratio of the LH and HL components of the interlaced image to a threshold instead of to the ratio of the LH and HL components of the non-interlaced image would have been obvious to one of ordinary skill in the art at the time of the invention, because one of ordinary skill in the art at the time of invention would recognize that the ratio of the components of the non-interlaced image is a form of a threshold that could be replaced by a fixed number threshold. For example, the fact that the amount of code of the LH component gets larger than the amount of code of the HL component when a video image with many lines, such as an interlaced image, is put

through wavelet conversion is disclosed by Matsushita, paragraph 67. Therefore, modifying Itokawa to compare the ratio of LH over HL code amounts to a threshold instead of comparing only the LH entropy to a threshold would have yielded the predictable result of estimating an amount of motion in the image.

Itokawa and Matsushita do not disclose a plurality of sub-blocks in high frequency sub-bands and estimating motion in the selected sub-block.

Acharya discloses selecting one of a plurality of sub-blocks in high frequency sub-bands and estimating motion in the selected sub-block (figure 13 and col. 10 line 60 through col. 11 line 10).

It would have been obvious to one of ordinary skill in the art at the time of invention to divide the LH and HL code blocks of Itokawa into sub-blocks and to calculate motion for a selected sub-block for the benefit of reducing errors as taught by Acharya in column 10.

Claims 58 and 62, which contain similar elements expressed in method and computer readable recording medium forms, are rejected for these reasons.

For claims 56, 60 and 64, Acharya discloses wherein the amounts of codes of the selected one of the sub-blocks are amounts of losslessly compressed codes.

For claims 57, 61 and 65, Acharya discloses the amounts of codes of the selected one of the sub-blocks are amounts of codes before bit truncation.

Allowable Subject Matter

Claims 55, 59 and 63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's arguments regarding these claims are persuasive. Specifically, these claims recite that a number of the sub-blocks in which the motion is estimated to be high speed and a total number of the sub-blocks in each of the frames are calculated, and a ratio of the number of the sub-blocks of the high speed motion to the total number of the sub-blocks is calculated with respect to each of the frames, and the calculated ratio is compared with a threshold, and it is estimated that a motion in the corresponding frame is high speed if the calculated ratio is greater than the threshold, and that the motion in the corresponding frame is low speed if the calculated ratio is less than or equal to the threshold. This feature is novel and nonobvious over the art of record.

Response to Arguments

Applicant's arguments with respect to claims 54, 58 and 62 have been considered but are deemed unpersuasive.

Applicant argues that Itokawa does not disclose "motion estimated on a sub-block basis." This is true, and this is why Acharya is cited.

Applicant makes the same argument with respect to Matsushita, which is that Matsushita does not disclose motion estimated on a sub-block basis. This is true, and is why Acharya is cited.

Applicant states that the “Examiner has not cited and the applicants are unable to discern the portion of Acharya that teaches or suggests the missing elements.” The Examiner is doing everything he can to cite the missing elements and to aid applicants in discerning the missing elements. The patent to Acharya is cited because it discloses “motion estimated on a sub-block basis” as disclosed for example in figure 13 and col. 10 line 60 through col. 11 line 10. Dividing the sub-band into sub-blocks is within the ordinary capabilities of a person of ordinary skill in the art as shown by Acharya. Using the sub-blocks to perform motion estimation is within the skill of the art as shown by Acharya. Modifying Itokawa to use codes present in sub-blocks of a sub-band, instead of the entire sub-band, to perform motion estimation is within the ordinary skill of the art as shown by Acharya.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY S. SMITH whose telephone number is (571)270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

JSS
April 1, 2008